

### ABSTRACT OF THE DISCLOSURE

A system monitors or images a portion of a sample. The system includes an optical interferometer with a measurement arm, a reference arm, and an optical splitter. The arms are coupled to receive light from the optical splitter. One of the arms includes an acousto-optical modulator. The interferometer is configured to interfere light output from the two arms. The system also includes a detector that receives the interfered light and uses the received light to determine a depth-dependent quantity characterizing a portion of the interior of the sample.

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